WHAT IS CLAIMED IS:

1. A method of imaging, measuring and displaying a 3-dimensional dose distribution of an energy field in a translucent 3-dimensional object comprising:

(a) applying an energy field to the object such that the optical properties are changed upon receipt of the energy;

(b) optically scanning the object at various positions and angles to provide a series of 2-dimensional representations of the object;

(c) detecting the measuring light projection data indicative of optical changes in the object;

(d) calibrating the optical change in the object to the dose of the energy corresponding to each position scan;

(e) mapping the dose of the energy in the object and

(f) visually recording the summation of said 2-dimensional representations on an image display receiver comprising a radiation activated metal salt of a crystalline, thermochromic polyacetylene having a conjugated structure uniformly distributed in a rigid or high density semi-solid matrix by a color alteration due to polymerization of the activated polyacetylene to provide a permanent, 3-dimensional image of the object in high spatial resolution.

2. An image display receiver displaying a colored 3-dimensional representation of an object which comprises a homogeneous rigid or high density semi-solid composition derived from a polymerized metal salt of a crystalline, thermochromic polyacetylene having a conjugated structure uniformly dispersed in a rigid or high density semi-solid matrix.

3. An image display receiver for development of a 3-dimensional representation of an object which comprises a metal salt of a polymerizable, crystalline, thermochromic polyacetylene having a conjugated structure which is uniformly distributed in a rigid or high density semi-solid matrix.

4. The image display receiver of claim 2 wherein said crystalline polyacetylene is a C_2 to C_{10} radiochromic monomer having the formula:

$$A\text{-}(CH_2)_m\text{-}(C{\equiv}C\text{-})_p\text{-}(CH_2)_n\text{-}B$$

wherein m and n each independently have a value of from 0 to 30; p has a value of 2 to 4; A and B each independently are R, OR_1, OH, $COOR_2$, $CONR_3R_4$ or $(CH_2)_r$-O-CO-NR_5R_6 or a metal salt of the acid or ester; and where R, R_1, R_2, R_3, R_4, R_5 and R_6 are each independently hydrogen or C_1 to C_{12} alkyl or aryl and r has a value of from 1 to 4.

5. The image display receiver of claim 2 wherein the metal salt of the crystalline polyacetylene is a lithium salt.

6. The image display receiver of claim 4 wherein said crystalline polyacetylene comprises a mixture of at least two of said monomers.

7. A radiation sensitive material comprising a C_2 to C_{10} radiochromic monomer having the formula:

$$A\text{-}(CH_2)_m\text{-}(C{\equiv}C\text{-})_p\text{-}(CH_2)_n\text{-}B$$

wherein m and n each independently have a value of from 0 to 30; p has a value of 2 to 4; A and B each independently are R, OR_1, OH, $COOR_2$, $CONR_3R_4$ or $(CH_2)_r$-O-CO-NR_5R_6 or a metal salt of the acid or ester; and where R, R_1, R_2, R_3, R_4, R_5 and R_6 are each independently hydrogen or C_1 to C_{12} alkyl or aryl and r has a value of from 1 to 4,

provided that at least one of A or B is COOH;

an organic base; and

a water soluble lithium salt,

wherein the weight ratio of said lithium salt to said radiochromic monomer is 0.2:1 to 0.8:1.

8. The method of claim 1 wherein said crystalline polyacetylene is a C_2 to C_{10} radiochromic monomer having the formula:

$$A\text{-}(CH_2)_m\text{-}(C{\equiv}C\text{-})_p\text{-}(CH_2)_n\text{-}B$$

wherein m and n each independently have a value of from 0 to 30; p has a value of 2 to 4; A and B each independently are R, OR_1, OH, $COOR_2$, $CONR_3R_4$ or $(CH_2)_r$-O-CO-NR_5R_6 or a metal salt of the acid or ester; and where R, R_1, R_2, R_3, R_4, R_5 and R_6 are each independently hydrogen or C_1 to C_{12} alkyl or aryl and r has a value of from 1 to 4.

9. The method of claim 1 wherein the metal salt of the crystalline polyacetylene is a lithium salt.